Fruits of Gregory Bateson's epistemological crisis: embodied mind-making and interactive experience in research and professional praxis

Fruits of Gregory Bateson's Epistemological Crisis: Embodied Mind-Making and Interactive Experience in Research and Professional Praxis

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ABSTRACT

Background: *The espoused rationale for this special issue, situated "at the margins of cybernetics," was to revisit and extend the common genealogy of cybernetics and communication studies. Two possible topics garnered our attention: 1) the history of intellectual adventurers whose work has appropriated cybernetic concepts; and 2) the remediation of cybernetic metaphors.*

Analysis: *A heuristic for engaging in first- and second-order R&D praxis, the design of which was informed by co-research with pastoralists (1989–1993) and the authors' engagements with the scholarship of Bateson and Maturana, was employed and adapted as a reflexive inquiry framework.*

Conclusion and implications: *This inquiry challenges the mainstream desire for change and the belief in getting the communication right in order to achieve change. The authors argue this view is based on an epistemological error that continues to produce the very problems it intends to diminish, and thus we live a fundamental error in epistemology, false ontology, and misplaced practice. The authors offer instead conceptual and praxis possibilities for triggering new co-evolutionary trajectories.*

Keywords: *Reflexive praxis; Experience; Distinctions; Critical incidents; Maturana*

RÉSUMÉ

Contexte *La raison d'être de ce numéro spécial « en marge de la cybernétique » était de revisiter et d'étoffer la généalogie partagée de la cybernétique et des études en communication. Deux sujets possibles ont attiré notre attention : 1) l'histoire d'explorateurs intellectuels qui ont emprunté certains concepts à la cybernétique; et 2) le rétablissement de métaphores cybernétiques.*

Analyse *Comme cadre d'enquête réflexive, les auteurs ont adopté et adapté une heuristique fondée sur des praxis de recherche de premier et de second ordre. Ont influencé la conception*

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de ces praxis une recherche entreprise par les auteurs auprès de pastoralistes (1989-1993) ainsi qu'un engagement envers les œuvres de Bateson et de Maturana.

Conclusion et implications *Cette enquête met en question le désir conventionnel du changement et la croyance qu'il suffit de bien communiquer pour entraîner ce changement. Les auteurs soutiennent que cette perspective se fonde sur une erreur épistémologique qui engendre les problèmes mêmes qu'elle cherche à résoudre. En effet, elle perpétue une erreur épistémologique fondamentale, une fausse ontologie et une pratique déplacée. À la place de celle-ci, les auteurs soulèvent des possibilités conceptuelles et pratiques propices à décrire de nouvelles trajectoires de coévolution.*

Mots clés *Pratique réflexive; Expérience; Distinctions; Incidents critiques; Maturana*

Setting the stage—conceptual

If innovation as well as social and personal change could be achieved by "effective" communication and the ready availability of knowledge, the world operating under the current mindset would be a great place to live. There would be ready at hand the vehicle, the wherewithal, to deliver on sound planning and intervention for the achievement of positive change. The desire for change and the belief in getting the communication "right," in order to achieve the nominated change, is pervasive in our society. Our experiences and rejection of this pervasive desire—particularly in the fields of psychotherapy, agriculture and rural development, higher education, and environmental governance—together with our history of engagement with cyber-systemic scholarship and praxis inform this article (see Ison, 2016; Ison & Russell, 2011; Ison & Schlindwein, 2015; Ison & Shelley, 2016).[1] For us, the problem is that this desire is based on an epistemological error that continues to produce the very problems that it intends to diminish. We address the fundamental error in epistemology, false ontology, and misplaced practice that lie at the base of this mindset.

Gregory Bateson (1991) asserted that the word "cybernetics" had become seriously corrupted following its initial introduction by the French physicist and mathematician André-Marie Ampère in his 1834 essay "Essi sur la philosophie" (see Tsien, 1954). Ampère used the word to describe the science of civil government. It was adopted and placed in circulation by Norbert Wiener in his 1948 book *Cybernetics*. Arguably it would have been more conducive to a broader inquiry had the word "cybernetics" not been settled on: from today's perspective, of the many affordances of the term "cybernetics," the focus has become images of mechanism that are inadequate for what is a theory and practice of the very underpinnings of animal, human, and mechanical engagement. Having made this claim, we are immediately in the realm of metaphor theory,[2] particularly concerns with the revealing and concealing features of a metaphor as well as particular theoretical entailments (Ison, Allan, & Collins, 2015; McClintock, Ison, & Armson, 2004).

A science of flow, whether it be in the cosmos, in nervous systems, or in machines, but especially in the organization of living, might have been more in keeping with what actually happens. That said, a flow metaphor reveals for some the "beingness" associated with immersion in the game, or dance, but conceals usage associated with rivers, lava, and the like, which are essentially linear of the form: flow from A to B. The

choice of a metaphor when talking about communication or mental matters as aspects of social relations is of critical importance if a false epistemology is to be avoided. If the metaphor is based on spatial or mechanical imagery, then subsequent thinking inevitably is led away from relationships and toward the materialization of mental or conversational phenomena. Too many contemporary metaphors conceal (or fail to reveal) relational dynamics such as those associated with co-evolutionary processes (Ison, 2016; Norgaard, 1994).

The word "cybernetics," in its original Greek usage, was associated with the act of steering, a practice, but came to encompass governance:[3] all that is pertinent to interaction of human to human and humans to machines, the conservation of networks, and patterns that interact with other patterns. The choice of the term to convey the sense of governance and an executive function must have been partially determined by the settings of the time. The advent of the industrial era, the mechanization of the labour market worked to shape the thinking of the hundred-year period from Ampère to Wiener, 1834 to 1948. *Cyber* as a prefix and a descriptor has assumed the role of organizing metaphor, a role often adopted outside of awareness and with consequences that express nothing less than the tide of the times. On the other hand, interactive interpretation of the image of a woman sailing (steering) a boat can reveal:

- through the agency of a helmswoman the operation or "integration" of both social (interpretations of purpose) and biophysical (wind, currents) feedback processes
- how the act of sailing arises in relational terms in which the social-biophysical relationship is mediated by technology (a boat with certain design features) or institutions (e.g., the rules of a sailing race)
- that sailing is always socially embedded, and mostly done with others (e.g., where there is a crew it involves co-building and enacting an effective "sailing performance")

Explored in this way, the revealing features of the cybernetic metaphor as the unfolding acts of governing (i.e., steering) far exceed those associated with a first-order cybernetic concern with governing of, or in, a machine, as in a steam engine or through actions of a thermostat in a heating/cooling system. The sailing metaphor speaks to the constraints, observed by Medina (2011), in the design and enactment of Chile's Project Cybersyn experiment fostered by President Salvador Allende. Put another way, for us the "steerer steering" is always part of the system; thus, our account could be described as a second-order cybernetic understanding of the metaphor (von Foerster, 1992).

Unpacking Bateson's epistemology is fraught when restricted to the use of words in communicative interactions that begin the process of conserving lineages of usage, interpretation, and understanding. For example, Wiener (1950) in his next book, *The Human Use of Human Beings*, wrote as if he were addressing the interpretation that his earlier text had been dehumanizing, emphasizing the potential productive communication implied by human and machine co-operation. Looking at the text with the benefit of hindsight, one sees that his thesis was governed by directional and control imagery. Here is his summary: "It is the thesis of this book that society can *only* be understood through a study of the messages and the communication facilities which be-

long to it; and that in the future development of these messages between man and machines, between machines and man, and between machine and machine, are [*sic*] destined to play an ever-increasing part" (p. 16, emphasis added**).** Wiener's overarching value/metaphor was conveyed in his definition of the message as "a sequence of events in time which, though in itself has certain contingency, strives to hold back nature's tendency towards disorder by adjusting its parts to various purposive ends" (p. 27). This acting with a purpose, intention, or design, which is rigidly predetermined, is at the heart of this article's thesis. These initial starting conditions created the pathway dependencies that have tended to be conserved ever since, at least within the dominant first-order cybernetic tradition which is also that of popular culture.

The core problem for Bateson, and the one we inherited as researchers and practitioners in our various domains, was the association of cybernetics with 1) control and 2) messaging as the effective transfer of "information." It became important to argue that to redeem Bateson's conception, emphasis needed to be put on the recursive nature of a circulating system and, in the case of any living or social system, the unit had to be the living organism and its environment. In this reframing, what drives "the system" is the emotion, the "fundamental, sensory, operational and relational condition … that makes possible our human living" (Maturana, Dávila Yáñez, & Ramírez Muñoz, 2015). What emerged from Wiener's neologizing can be understood as the conservation of two lineages, traditions of understanding (Russell & Ison, 2000a) that began to be conserved in different practices, including communication practices.[4]

In the early 1950s, Gregory Bateson was a major protagonist in espousing a radical epistemology, one that questioned the long-standing acceptance, the taken-for-grantedness, of a mind-less biology, psychology, and all other domains of knowing. Bateson's "mind" was the foundational construct of all knowing and was essentially a doing activity, a verb, a mind-making phenomenon. The past 60 years have been a testimony to just how difficult it is to follow through, in practice, with the application of his epistemology. Research experience shows how seductive it is to fall, almost unknowingly, into attributing a thing-ness quality to experience. What humans do well is the creation of objects that are then endowed with characteristics. As Bateson himself would say, we are drawn to the dream of "the idea of power," the sense of "control," that we assume will deliver that which we desire (as researchers, academics, practitioners in the clinic and the field). From our experience, the seduction of "power" in this sense applies across the social and biophysical sciences. It even applies to many conceptions of "power." A common trap is when what might be sensed as power fails to be explored and reframed as a phenomenon of relationship, particularly where there is institutional or technological failure to mediate/create and sustain relationships having certain qualities (e.g., the difficulty today of safely creating the experience of swimming in fresh water for a child).

Setting the stage—personal

Collectively or individually the authors, for the past 30 years, have been struggling with extending cybernetic thinking, systems thinking (i.e., cyber-systemic thinking), and the "embodiments of difference," the "feeling" of difference/news, into situations

of uncertainty, complexity in which there is rarely one perspective that is, by itself, valid to the issue at hand.[5] Our practice covers multiple domains with mixed results in each, but has been more extensive in agricultural and rural R&D, social-biophysical "system" governance (e.g., river basins or catchments), in psychotherapeutic practice and in higher education (HE) learning and teaching. Contested understandings of communication and research lie at the heart of each of these situations of concern, or domains, an issue still prevalent in communication research. As Fabien Granjon (2014) wrote, "Outside France, the classical diffusionist, functionalist, and quantitative orientations continue to mark a great deal of the research undertaken…" (p. 117).

The notions of "struggle" and "mixed results" underscore just how challenging it has been to be true to Bateson's dictum that what gets from the territory onto the map is *news of difference* and *nothing else* (G. Bateson, 1991).[6] The research questions that have preoccupied the authors since the mid-1980s are as follows:

- What would have to be experienced to claim an experience of Bateson's epistemology as praxis?
- What trajectory-shifting actions might be undertaken to begin to conserve a Batesonian epistemology as a particular manner of living?
- How might Bateson's epistemology be institutionalized such that it gives rise to governance performances (within a co-evolutionary dynamic between the social and biophysical "worlds") that begin to be conserved?
- Does the study of regulatory processes imply acting with intention or predetermined design?
- Do circular processes and systems thinking (i.e., cyber-systemics) necessarily imply predetermined goals?
- What does, or could, acting purposefully (innovatively, designerly, entrepreneurially, ethically, systemically) within a Batesonian epistemology entail?

Beginning in 1986, like many others in applied research, we cut our teeth on a critique of the dominant practice, in our case the extension of laboratory/field research offered to the end-users (agricultural producers) within a model of agricultural research and extension that had become widespread (Russell, Ison, Gamble, & Williams, 1989). We found inherent epistemological contradiction in the model of communication/extension in use and proposed a conversational model as an alternative, and logically consistent, practice (and which better resonated as being more useful with our constituency, the agricultural producers). This initial work led to a major applied research program, the Community Approaches to Rangeland Research (CARR) project (1989–1993), working with pastoralists in semi-arid Australia, in which a radically different model of doing R&D was tested (Ison & Russell, 2000a).[7]

At the heart of our work is the experience of knowing as coming to know, the emotional drive underlying this process, and the practical verification of this epistemology in its use. The two-stage process of bodily experience (outside of awareness) and then the act of reflecting on that experience, or on some of it at least, Bateson's "idea" as the feeling/news of difference, was and is our unifying understanding. Our

reflexive journey offers insights for contemporary concerns including transdisciplinarity, second-order science, institutional innovation, and what might be gained from investing in cyber-systemic praxis from the margins.

Methodological approach

Just as the artist Paul Klee saw drawing as a way of taking a line for a walk, the authors, by attending to the actual interaction, doing our best not to abstract from experience, will attempt to take the reader for a languorous stroll through the ups and downs of some of our major projects from 1986 till the present. Understandably, there is only scope for a few stops along the way. To do this we begin with reprising and reviewing one of the major outputs of the CARR project undertaken primarily with pastoralists in semi-arid Australia (Appendix). The design and rationale and outcomes of this research are reported in Russell and Ison (1993) and Ison and Russell (2000a; 2007). The table in the Appendix reports a four-stage strategy as a template for guiding the design of a second-order R&D system. This design and our testing of it drew heavily on Maturana's and Bateson's epistemologies (see Russell & Ison, 2000a, 2000b; Ison & Russell 2000b). This framework, when developed, offered a formal and complete second-order R&D procedure in which transparency and openness to public scrutiny could be achieved.

Working contemporaneously with, but without mutual awareness of, Gibbons, Limoges, Nowotny, Schwartzman, Scott, and Trow (1994), who distinguished Mode 1 and Mode 2 forms of knowledge production, we distinguished second-order and first-order R&D. To us, the latter was the mainstream approach, in which the researcher remains outside "the system" being studied:

> The espoused stance by researchers is that of objectivity and while the system being studied is often spoken of in open system terms, intervention is performed as though it were a closed system. Perception and action by researchers and those who manage and maintain the R&D system are based on a belief in a real world; a world of discrete entities that have meaning in and of themselves. (Russell & Ison, 2000a, p. 10)

Our concern was to devise a means to break out of the dominant tradition and to invent one which "honoured" the epistemological commitments of Maturana and Bateson. Thus, in contrast to the first-order tradition, we stressed

> the need for a second-order R&D in which the espoused role and action of the researcher is very much part of the interactions being studied. How the researcher perceives the situation is critical to the system being studied. Responsibility replaces objectivity as an ethic and perception and action are based on one's experiential world rather than on a belief in a single reality "real" world. (Russell & Ison, 2000a, p. 10)

Unlike Gibbons et al. (1994), we drew explicitly on cyber-systemic understandings, with an appreciation that first-order approaches had at their core a model of communication based on simple feedback (as in a thermostat) and historically based misunderstandings from nerve physiology and mathematical models of signal transfer (Fell & Russell, 2000). Signal transfer, we argued, should not be confused with human communication, which has a biological basis. Second-order communication we understood

as arising from a theory of cognition that encompasses language, emotion, perception, and behaviour. Among human beings, this gives rise to new properties in the communicating partners, who each have different experiential histories. There are of course implications in any move toward a second-order R&D, not least of which are the forms of behaviour and organization that might be required by, and for, a future cadre of "researchers." This initial collaborative fieldwork built an intellectual and methodological platform for ongoing but separate work by the authors.

Inquiry pathways and critical incidents

Our purpose in this section is not to reprise the major elements of this earlier research (e.g., see Ison & Russell, 2011), but to revisit the main outcomes that expressly address innovations in praxis and to offer critical reflections relevant to the concerns of this special issue. To do this we draw on an adaptation of the methodological approach developed and explained in Colvin, Blackmore, Chimbuya, Collins, Dent, Goss, et al. (2014), who used as a key organizing metaphor an "inquiry pathway" (following Churchman, 1971). Along our inquiry pathway we braid reflexive first-person inquiry (see Reason & Bradbury, 2008) with critical incidents (see Flanagan, 1954) and cybernetic concept choice/use associated with our praxis (i.e., the recursive relationship between practice and theory/explanation). Our inquiry pathway begins with the first major joint project that we undertook, as explicated through the Appendix. We visit other projects conducted jointly or independently before providing an account of therapeutic praxis as developed and enacted now by David Russell (DBR). Our aspiration in our methodological approach is to give the reader some feel for what our praxis entails and how it has evolved over time in different domains. Importantly, we have no blueprint to offer and our account is, by necessity of length, only partial.

The idea of a "critical incident" has been interpreted in several ways. We describe a critical incident as those experiences of difference that made a difference to our doings. In this regard, an experience that recurs for us is the awareness of difference that arises when an existing organizing metaphor is unable to coherently organize or synthesize our experience (Russell & Ison, 2000c). For example, in 1990 under the seduction of a collaborator we used a methodological approach with pastoralists that sought to gain consensus around a common R&D action. Over time we came to understand that consensus was a lowest-common-denominator position in which the only carry-through action was from those who held the consensus position from the start; the process robbed the other pastoralists of their enthusiasm for action. Having discerned, through experience, the difference between consensus and accommodation among differences, thereafter we always sought to hold open the space for exploring and working with difference. This carried though into later research work when, after often heated and conflictual debate, the idea of a final synthesis report for a major European project was rejected in favour of a heuristically mediated process of valuing and mediating difference that came from the different cultural and disciplinary traditions of the researchers (Blackmore, Ison, & Jiggins, 2007).

Reflections on praxis

The Appendix table is used as a heuristic for reflecting on our praxis and for relating

specific critical incidents (as above). The table is organized to explore: 1) the "process stages" in our co-research praxis model; 2) necessary tasks at different stages understood as first- or second-order processes; 3) the skills required at each stage, and 4) some potential pitfalls. These first four columns can be understood in terms of method. We then move up a level of abstraction to offer 5) critical reflection/incidents from David Russell's praxis (DBR), and 6) Ray Ison's praxis (RLI), respectively. The table concludes with 7) notes on some contemporary implications. Detail of the research practices we developed, or employed, in enacting the various steps in this framework are described in Webber (2000). Only a very partial account can be given here.

Reviewing praxis 1

Research practices included visits to pastoralist families along particular transects, undertaking semi-structured interviews modified to trigger stories and enthusiasm; taping and analysis of interviews to create "rich picture" posters of our findings, which were "mirrored back" within a community meeting in a local shearing shed (i.e., we reported what we had interpreted, thus taking responsibility for our interpretations and inviting clarification). This worked—the feedback was that "we understood," unlike most people who came from outside their world. For reporting we assisted participating pastoralists to reflect about their experiences and contribute to the writing (Dignam & Major, 2000).

We explain some of the emergent conceptual and methodological themes arising from our reflections in the following sections. The table in the Appendix could also be read as a design heuristic for cyber-systemic praxis at the margins and for conducting second-order science (see Appendix in Ison & Russell, 2000a).

Our rangelands project was highly successful in that it accomplished targeted first-order objectives (e.g., demographic trends; technology audits—CARR, 1993a; Ison & Russell, 1993); specified second-order aspirations (e.g., graziers re-conceptualizing themselves as R&D professionals and engaging in co-research); and provided the raw material and emotional climate in which the R&D process itself could be scrutinized and modified to better match the multilayered demands of its context. Certain second-order aspirations were not achieved—for example, our work with research and advisory staff from New South Wales (NSW) Agriculture (the state agency responsible for doing agricultural extension) did not lead to the establishment of a co-researching community (CARR, 1993b; Ison, 2000).

The praxis described in the Appendix can be compared and contrasted with the contemporary praxis of DBR: what the practitioner does in doing a psychotherapy of embodied mind-making.

Reviewing praxis 2

The Queen might well have asked Alice: What do you do when you do what you do? And thought it a perfectly good question. It is an unusual manner of asking about a particular practice, but it has the advantage of avoiding principles and/or aspirations and focusing on experience. The following description indicates what the experience of psychotherapy praxis might look like as developed by DBR.

First, there is a meeting of two differing desires (the therapist's and the client's). These constitute a never-emptying melting pot of expectations that need to be expressed and acknowledged but not necessarily fulfilled. Expectations are akin to aspirations; what is expressed is so great, but what actually happens is so little.

It is taken for granted that a client in emotional distress is desirous of relief from their symptoms. The therapist, in listening attentively to the experience of this distress, acknowledges its reality for the client. In addition to listening, the therapist asserts a desire to establish a mutually satisfying relationship, based on mutual satisfaction. To achieve this, the therapist commits to staying in the ongoing therapeutic conversation until that time when satisfaction is achieved. To illustrate what this exchange might feel like, there is no better source than Angela Carter, the magical realism author. Carter was at her best when she offered an inversion of the romantic reverence accorded to literature and, by extension, to clinical psychology and so-called evidence-based therapy. Carter, in *The Sadeian Woman and the Ideology of Pornography* (1979), invited a partaking in a feminist reading of the Marquis de Sade when she wrote: "We do not go to bed [or attend a therapy session] in simple pairs: even if we choose not to refer to them, we still drag there with us the cultural impedimenta of our social class, our parents' lives, our bank balances, our sexual and emotional expectations, our unique biographies—all the bits and pieces of our unique existences" (p. 10).

Second, the process of therapy is a continuous recursive offering of invitations: invitations to say more verbally and non-verbally, in imagery, in motion, and in thought. The framing of these invitations needs to be such that they do not constitute an intervention, which is the more traditional metaphor in use in the literature. An inevitable entailment of an intervention (the sting in the tail) is that it is an imposition, again in any sensual modality, of the therapist's experience over that of the client. The recursive invitation to stay with, to deepen, specific and detailed experience is analogous to the evolutionary assumption that innovations arise independently of the functions that they serve (Berwick & Chomsky, 2016). Therapeutic change implies that the antecedent ingredients must in a sense already exist. Trust in the recursive nature of the invitation, in the presence of sufficient "ingredients," and in the emotional (the neural circuitry of desire) interplay of action and reflection constitutes the therapeutic process. Avoidance of any desire to impose, overtly or covertly, a perspective, a way of thinking, or a behavioural strategy helps retain the integrity of Bateson's espoused epistemology and shuns a power relationship.

Third, to say that conversation and language are what we have and are our means of meaning making is to claim that the conceptual-intentional interface for thought is both the thrill and the challenge of being human. From this source come our troubling experiences and our sense of agency. Harlene Anderson (1997) offers a detailed history of a conversational approach to therapy that shares common ground with the authors' attitude and practice. Although the espoused praxis is primarily phenomenological, it is not at odds with current findings in the field of neuroscience and developmental psychology (e.g., see Marc Lewis' *Biology of Desire*, 2015).

Fourth, a strategy of action need not be an intervention. Classical psychotherapy (stemming mainly from Freud and Jung) proposed a goal of improvement conceptu-

alized as a reduction in symptoms or the achievement of wholeness. In contrast this model refrains from stating goals as it follows the understanding that any formulation of preconceived and desirable outcomes tends to limit the therapeutic process and result in an objectification of a desired experience.

The intention/purpose is to stay with the psychological phenomena, as they are experienced, including the distressing symptoms, and to de-literalize all formulations of purpose so that the therapeutic work can be a "sticking with the actual images" (Hillman, 1985). The name for this manner of working is archetypal psychology (Hillman, 1985, 1997/2001); it is characterized by the enhancing of imagery and emotion-imbued imagery in particular. What it does not employ is a therapy for pathology.

The imagistic and emotional base of material is inevitably expressed in the style of narrative. The problematic material becomes the subject of an imaginative and often literary reflection. A poetic basis of mind becomes more relevant than a literal or objectifying attitude. The narratives are re-told and the versions actively incorporate the personal failures and suffering but in less of a raw form and in more of a metaphorical and mythic form. This involves a move from unreflected and objective referents to a more imaginative and aesthetic response.

Finally, therapy ends when a satisfying-enough sense of agency is achieved. If there is purpose or a goal, then this is it. The ritual of regular visits, face-to-face conversations, at a fixed location and for a fixed fee, is deemed to be finished.

Emergent reflections—methodological

We first reflect on the process of engaging with the R&D heuristic (see Appendix). Perhaps the first point to be made is that our recent praxis settings have been quite different. In therapeutic practice the state specifies, sanctions, or condones the need, and resources, for the therapeutic engagement (i.e., there are particular institutional arrangements, though they may well be premised on a "false" or limited model of the therapeutic process). In contrast, in the field of multi-stakeholder NRG (natural resources governance) there are few, if any, satisfactory institutional arrangements to adequately engage with, and transform, situations that might usefully be framed as wicked; instead in the case of rivers/water, for example, a key domain of NRG, rivers have been historically framed as hydrological, or geographical, or more recently ecological systems, in other words as a form of biophysical system that excludes people and the social world. This has led Ison, Collins, and Wallis (2014) to suggest and explore re-framings of rivers as structurally coupled social-biophysical systems with the social and biophysical unfolding in a co-evolutionary dance over time. This reframing choice draws on both Maturana (the structural coupling of two systems) and Krippendorff's (1993) dance-ritual metaphor for communication. The need for change is profound yet all too slow. Consider, for example, how long it is taking to create and agree on a therapeutic model to meaningfully engage with the biosphere over human-induced climate change (Ison, 2016). Of course, the presence of conducive institutional arrangements does not guarantee effective or epistemologically aware praxis.

Our use of the heuristic causes us to reflect further on the question of what constitutes a critical incident. In one sense there have been no critical incidents of sufficient profundity to move us away from the trajectory we embarked upon when our collabo-

ration began 30 years ago. However, the known, when seen with a critical eye, becomes an invitation to re-frame the event in its context, from which new meaning or a new issue emerges. In systemic terms this can lead to a boundary shift, and to being open to new relationships. For example, the model on which the Appendix table is constructed was set up within the context of doing co-research; it arose out of a funded project; but it did not have a conducive governance setting within which it could co-evolve into an unknowable future. Our understandings were reified in academic papers and a book, but we also failed to get any of our practices institutionalized, though perhaps some of our methods, tools, and techniques were picked up at least in part.[8]

For RLI, a critical incident was his partial return (professionally) to Australia in 2006 after 12 years in the U.K. and finding the linear, first-order model of R&D stronger than ever (i.e., deeply entrenched) (Ison & Russell, 2011). We conclude that our current processes of transforming embodiment (i.e., building new traditions of understanding through engagement in joint action) are too limited and too weak (at least outside the therapeutic setting). It is difficult—and rare—to have an opportunity as we did in 1989–1993 to try to enact the whole of the four stages outlined in the Appendix. We were lucky in the rangelands, but all four stages have not, too our knowledge, been enacted since.

In the NRG praxis domains there is no obvious answer; the mainstream paradigm persists in agricultural R&D, in higher education where "content is king," aided by new institutional forms such as MOOCs,[9] which perpetuate the linear delivery model of pedagogy at the expense of enabling experiential, embodied learning. The same is true of public policy, where, in the U.K. at least, "deliverology" has been a primary concern of governments (Seddon, 2008).

A similar struggle between first- and second-order understandings of cyber-systemics is apparent within family therapy and the variant in praxis called "systemic family therapy." In the first-order mode "[cybernetic understandings] … sought to examine how various structures might maintain equilibrium through mechanisms such as knowledge feedback loops, and family therapists adapted these ideas to what they essentially saw as the self-contained and self-regulating family organism" (Stewart, 2013, reviewing Weinstein, 2013). In contrast, Umberta Telfener (2011), a member of the Milan School of systemic family therapy, draws on Maturana (1990) to claim the essence of a second-order praxis is to first take responsibility for the awareness of one's own participation in the social construction of ideas such as "pathology," "symptom," "problem," "change," "intervention," "participatory research," "creativity," "capacity," and "professional." Arguably systemic family therapy practitioners have been more successful in institutionalizing a community of praxis than in other domains (see Telfener, 2014; Weinstein, 2013). There are lessons in our experience and that of systemic family therapists for those who seek to build and institutionalize transdisciplinary praxis (Ison, 2017) and second-order science (Lissack, 2014).

We have found the critical reflection process affirming in the sense that arising from our joint research are practices and understandings that have proven robust and resilient, as well as ethical, over time. These include the project management process of building the research team as systemic action researchers "walking the talk" in their

doing, which we developed and sustained in our CARR project (CARR, 1993b) and have adapted in other contexts since (e.g., Blackmore et al., 2007). Our mode of engaging the pastoral families as co-researchers can be understood as a precursor to now-established interest in co-research approaches (e.g., Hartley & Bennington, 2000) as well as increasing interest in co-design practices (Bradwell & Marr, 2008), described by Powell (2011) as

> a public-service design approach wherein users of services—for example, public transit or healthcare services—are explicitly involved in formal design activities. Especially when employed in the design of technologies for public services, these design approaches can garner benefit from involving a greater number of stakeholders and inspiring more radical service design. (p. 110)

Powell in her research in yet another domain also notes the pervasiveness of "assumptions of linear progress … enhanced by organizational structures that separate decision-making from use, participation from governance," all concerns that we share (2011, p. 110).

Perhaps most significantly, our understanding of *enthusiasm* (from the Greek *en theos,* meaning "the god within"), which we elucidated through our co-research with pastoralists as an alternative basis for doing R&D to that of "information transfer" (CARR, 1993a; Russell & Ison, 2000c), has stood the test of time in our own praxis; trusting the emotion of enthusiasm as the motivational driver of relationship has been central to our praxis since this time.

Emergent reflections—conceptual

In this section we draw attention to five reflections on relationship creating and maintaining as part of a praxis dynamic as well as the important role of embodied learning.

Relationships as prima materia

The fundamental constituent of our applied research has consistently been relationship. Adopting the alchemical term *prima materia* as a metaphorical image for this fundamental dynamic underscores its critical role. The alchemists believed that they needed to begin their work by establishing and foregrounding that which was experienced prior to matter. Paradoxically, only the relationships matter.

It is far easier to say "relationship" than to have a listener experience how relationship functions as a reciprocal unfolding of experience much in the manner of Krippendorff's (1993) dance-ritual metaphor for human communication. A feature of our praxis that we take from our encounters with Humberto Maturana is to open a talk or lecture with an invitation to consider a phenomenon that has potential to take a listener out of their commitments to "thingness" and linear causality. Inviting an audience to consider how walking arises as a practice, following Maturana, works most effectively. For RLI, only once has an audience participant come back with the explanation that walking arises in the reciprocal relations, or relational dynamics, between a body (a person, with a history that is evolutionary, cultural, and social/personal) and a medium, such as a floor, or path. The majority offer explanations that are rooted in linear causality between things and events. Gregory Bateson also exploited this

praxis when he asked of audiences why is it that we refer to humans as having four fingers and a thumb (things) rather than four relationships, between an opposable thumb and each of the fingers (see N. Bateson, 2011). In evolutionary terms, it is the relational dynamics made possible by an opposable thumb that matter. In terms of communication effectiveness, these examples show the importance of shifting the underlying emotion if one wants to experience a different hearing.

Relationships, language, and emotion

The common view of language is that its primary function is to facilitate communication, however the research shows otherwise. Noam Chomsky (2016) in a recent interview argues that the evidence points to communication as being secondary and that meaning making is what is primary. Language is predominantly an inner *languaging* and mostly outside of consciousness. The way a human engages is in relationship with oneself. Relationship is, in a word, languaging; being in language. An extraordinary aspect of being in relationship is that there is an autobiographical quality to the experience. There is an experienced past, present, and anticipated future, all of which constitutes a sense of self, a sense of other, and a sense of bonding: the relationship. Our use of "languaging" as a concept draws on Maturana, who understands it as an unfolding circularity in which consensual relations are brought forth and conserved, or not (e.g., see Proulx, 2008).

The other extraordinary aspect, and one that has long troubled psychologists, is the question of how is one to account for the phenomenon of incitation to action: what is referred to, but never adequately explained, as motivational driver, emotion[10] or activation. In a recent review of the relevant neuroscience research, Emilio Bizzi and Robert Ajemian use the metaphor of the puppeteer to summarize their findings: "[W]e have some idea as to the intricate design of the puppet and the puppet strings, but we lack insight into the mind of the puppeteer" (Bizzi & Ajemian, 2015, p. 93). Or in other words, how is one incited or inclined to do anything?

The centrality of being in relationship is expressed in both authors' praxis and is conveyed in poetic form by Antonio Machado's evocative words: "Wanderer, your footsteps are / the road, and nothing more; / wanderer, there is no road, / the road is made by walking" (Machado, 2007 p. 138). In the clinic the therapeutic encounter for DBR is expressed as the reciprocal unfolding of experience, the footsteps are the road that is only recognized on reflection. Through the exchange of reflective language, in a poetic and imaginative sense, the words become flesh (Russell, 2011a).

Narrative as the expression of relationships over time

Avoiding the framing of the "work" as a narrative with a whiff of an objective outcome has proved to be a constant preoccupation. As has the refusal to allow redemption, an amelioration, into the narrative-in-action. This commitment to a praxis of "narrative" as a sequence of recursive processes and nothing more is what makes it both a difficult philosophy and a source of great strength. The upshot is inevitably a bittersweet experience (Paschen & Ison, 2014; Russell, 2011b). Along with every attempt to avoid the seduction of objectivity is the emphasis on a non-literal disposition toward the use of language. A narrative expression, which is more metaphorical than literal, has encour-

aged embodied learning and the ongoing development of an embodied imaginative attitude (Ison, Blackmore, & Iaquinto, 2013; Russell, 2003).

Invitation as manner of entering relationships

Contrary to the notion of "expert" is the one of embodying the experience of engagement: an experience shaped by the desire, the emotion, to be present with another in a manner of deep respect for each other's autonomy. As an expression of this deep respect, the emotional move is to offer an invitation to "walk" together. This invitation seeks neither agreement nor shared understanding. In fact, the attitude of inviting is characterized by a willingness to have the invitation accepted or not, both being of equal value. Using the knowing of how we do what we do has been the fundamental starting point in taking the next step in the unfolding of the ongoing experience. And in doing so, the path is put in place by the walking i.e., a "design" that is not designed to achieve a preconceived outcome but a public acknowledgement of the necessary process.

Conservation of relationships

The clinical relationship (experienced by DBR) is clearly a constructed relationship based on the negotiated contract of a specific number of sessions and the agreement that both parties desire a mutually satisfying experience. The desire and expressed agreement is to stay present in language and reflective conversation. It is Maturana's (2016) assertion and one with which we concur that "Living in reflective conversations is our human cultural manner of living together; and living in language in reflective conversation is our particular ecological niche" (p. 214).

Being in therapy is a particular manifestation of an ongoing conversation that is shaped by the emotion of deeply respecting the other as an independent other, freeing the two participants from "prejudices, ambitions or expectations [and] is what we call love in daily life" (Maturana & Poerksen, 2004, p. 117). The overarching commitment is to stay present in this constructed or realized relationship for the duration of the agreement. In doing this the necessary conditions for being in this particular sort of relationship, one shaped by the emotion of "love," are established and maintained.

No one better than Maturana has articulated the circular epistemology that makes no reference to some independent domain of existence. The ongoing task is to explain what we do by doing what we do. Gregory Bateson (1991) referred to the classic paper "What the Frog's Eye Tells the Frog's Brain" (Lettvin, Maturana, McCulloch, & Pitts, 1959) to explain how the manner of operation of the nervous system determined the phenomenon of perception. And, as emphasized by Maturana in all his subsequent publications, the observer who offered the explanation did not exist prior to their distinction of themselves as the observer.

Reflective listening and reflective languaging are based on a form of perception, a disposition, which allows the other to appear as legitimate. This disposition creates a space in which the other, the client in therapy, is given a presence to which the therapist can relate to with respect. Of course, therapy is just one example of the creation of such a space. We have a long way to go in our relations with the biosphere, and one can see through the lens of a Batesonian epistemology that our preoccupation with an independent "environment" (as in an "Environment movement," or a desire to

save *the* environment) has been ill-conceived and, possibly, constituted a loss of valuable time to rejig our co-evolutionary trajectory.

The fundamental condition of such a space is trust. Trust is the basis of the organism/environmental niche that is the unit of life; importantly, trust does not exist *a priori* (i.e., before the relationship); it is not an "input" into the relationship. Trust is invariably broken in the natural environment, as it is in all relationships. The recursive dance is one of trusting/broken trust/re-trusting, with the overarching desire to invite the other into the domain of legitimacy, the domain of love. This is an ethical reflection and an ongoing responsibility, which when brought into the creation of this dynamic space, creates the circumstances for further response-ability (i.e., thus creating the reciprocal circumstances for responsibility). Language offers the space to reflect and distinguish the consequences of our actions for the other(s) with whom we live and work. It is precisely because of reflective language that we can speak of responsibility.

The beauty of offering an invitation to engage in this space, one shaped by the emotion of deep respect for the other, is that it is not framed in the words of an intervention or even a recommendation. Following Maturana, it is a statement of fact: if there is no love, there is no social relationship. If there is a relationship informed by other emotions, such as competition or aggression, there is a very different experience. One might suffer such an experience but it will not, in any sense, enhance social or professional or political life.

Embodied learning

While we can only talk about what we are doing (including theorizing as doing), it is important to distinguish between the domain of living systems (specifically the body) and the social/cultural domain that is generated through our conversations, reflections, and theories. Distinguishing the two domains is useful and separating them is impossible. The position of a dual epistemology and a singular ontology is the conclusion of eminent psychologist Max Valmans (2009) in his work on understanding consciousness. Maturana asserts the biological understanding when he writes: "[T]he biological processes and the interpersonal relations are different kinds of phenomena and to confuse them is a conceptual mistake" (Maturana, 2016 p. 213). An epistemological error is committed because operational and conceptual domains are cofused. The notion of a single ontology asserts that the experiencing body (or, more precisely, the dynamic ecological organism-niche unity) is the foundation of all life. Yet it is in the relational space that we do our living even when we are unaware of it, which is for much of the time. The recursive dynamic of body and space and the ongoing relationship that is constituted by this interaction is then the source of further reflection, which is capable of being interpreted as challenging or wonderful or both. Through our learning as researchers/authors we want to continuously reflect on the conversations that maintain the "well-being of living together in the intimacy of coordinating the doings of the daily chores that created (and continue to create) a loving relational space" (Maturana, 2016, p. 214).

Concluding reflections

The espoused rationale for this special issue was, through "situating at the margins of

cybernetics," to revisit and extend the common genealogy of cybernetics and communication studies. Among the possible topics imagined, two garnered our attention: 1) the history of intellectual adventurers whose work has appropriated cybernetic concepts; and 2) the remediation of cybernetic metaphors. We relate very strongly to this desire to trigger a shift in the co-evolutionary trajectory of cybernetics and communications studies, but others must judge whether we fulfil the role of adventurers and the extent to which our praxis constitutes remediation. In these final reflections we offer a minimum set of "appreciations" that from our experience are essential for a would-be remediation practitioner understood as a trajectory changer:

1. Neither cybernetics nor communications studies are meaningful unless grounded in praxis.
2. Praxis based on words and written text, whilst necessary, is inadequate to trajectory-changing transformation. Maturana understands this even if his writing leaves the reader, more often than not, frustrated (see Russell & Ison, 2004). His ambition is to always walk his talk, even in his writing. Our experience is that time can help (e.g., number of sessions in therapy) but that use of collaborative diagramming, active exploration of metaphors, and the like are more reliable (i.e., practices that engage the body in conversation beyond words).
3. All learning is experiential, and experience arises in the act of making a distinction in relation to oneself (to one's history). In other words, appreciating that without distinction (difference) there is no experience is a key ingredient of institutional and praxis innovation.
4. Humans live with a passion for explanation; what does or does not constitute an explanation is a relational dynamic between explainer and listener and is mediated by the emotional character of the dynamic.
5. All knowing is doing; this underpins the historical explanation of the shift from first- to second-order cybernetics triggered by questions of who the controller (explainer, observer) could be taken to be, or as Heinz von Foerster is reported to have said, "the cybernetics of cybernetics" (see Fell & Russell, 2000).
6. Humans live in language, and it can be helpful to consider that language uses us more than we use language (following Maturana); to paraphrase the English author Julian Barnes, terms such as "emergence," "conversation," "consciousness," "self," and "explanation" are verbs masquerading as nouns. Because humans live in language it is possible, through conversation, to reach agreement; hence in an uncertain and essentially unknowable world, it makes sense to converse about purpose and ethics.

With these six points as background, we conclude by revisiting our final research question as articulated earlier: What does, or could, acting purposefully (innovatively, designerly, entrepreneurially, ethically, systemically) within a Batesonian epistemology entail? Perhaps it is too early to answer, because it is what we should not do that is more readily apparent. This could be understood as a form of reframing, or deframing, which is much needed.

For example, it is perhaps Herbert Simon, "among the founding fathers of several of today's important scientific domains, including artificial intelligence, information processing, decision-making, problem-solving, organization theory, complex systems, and computer simulation of scientific discovery" (Herbert A. Simon, n.d.), as much as anyone, who contributed to a distortion of Bateson's epistemology. In the post–Second World War period and across different fields of scholarship Simon's understandings and language became institutionalized and at odds with Bateson's epistemology. This is a co-evolutionary trajectory inadequate to our circumstances. But how to change such a trajectory? We would highlight as inadequate notions of goal-directed planning (including objective setting, performance indicators, targets); the mainstream understanding of information and associated practices under the rubric of "knowledge, or technology, transfer"; rational planning (blueprints, or as Donald Schön [1995] called it, the "high ground of technical rationality"); and artificial intelligence, to name but a few.

As we have highlighted elsewhere (Fell & Russell, 2000; Ison, 2010), Heinz von Foerster's reflective insight about his own praxis as author during the Macy Conferences in the 1950s is telling (Capra 1996): "[I]t was an unfortunate linguistic error to use the word 'information' instead of 'signal' because the misleading idea of 'information transfer' has held up progress in this field" (Fell & Russell, 2000, p. 34). If Krippendorff's (1993) major metaphors of human communication are considered, only one comes close to how communication happens biologically, viz. "the dance-ritual metaphor." Avoiding the limitations of this institutionalized semantic mistake has been central to our praxis in the past 30 years, whether in university teaching and learning-system design or research and professional praxis (Ison & Russell, 2000; Russell & Ison, 2004, 2005). A key element, perhaps *the* key binding element, of this praxis is to strive to be open to the flow of emotioning (*sensu* Maturana), or to imagine, *a priori*, how in a particular context (anticipated future) the flow of emotioning might unfold, much as a choreographer imagines an audience in a co-dynamic with a performance (see Russell & Ison, 2004).

Our collaborative journey leaves us constantly aware that one is always immersed in a tradition of understanding out of which we think and act and which unfolds every moment of our living. RLI's experience is that entering into conversations about purpose or design or ethics enhances one's behavioural repertoire in the unfolding moment, but only if one is open to the emotions of the moment and not the emotions reified in what is seen in the mainstream as the plan, goal, or objective. In this way research praxis in which the researcher is part of the "research system" (i.e., doing second-order R&D) is similar to actors, or other performers, who may rehearse and/or talk through how to interpret and create a role but who, if they are good, are constantly open to feedback from audience or other actors, but most importantly are open to the moment of difference, or distinction. In this way purpose is reframed not as a projection onto a situation, but as an enactment of the recursive dynamics of responsibility and response-ability.

Acting purposefully within this understanding requires awareness and emotional literacy associated with an appreciation that the past and anticipated future are merely

different manners of living in the present. Thus, recovering a history, talking about a future each trigger different ways of being in the present. The radical nature of Bateson's cybernetic epistemology is that any preconceived notion of how a change should look, any concept of betterment, for example, is a manifestation of a desire for power over, or control over, how conditions determine experience. When applied to management of climate change or reduction of psychological symptoms in a therapeutic setting, we begin to feel the imperative *but* no purpose is desirable other than working to conserve the relational conditions that make possible human living, the quality of that living, and the relational dynamics that unfold with other humans, other species, and the Earth itself, along possible trajectories.

Notes

1. In using the term "cyber-systemics," we follow a usage coined by the late Gary Boyd, Professor of Education (educational technology) at Concordia University, Montréal. See Boyd, Gary & Zeman, Vladimir (2007).

2. At least within the contemporary theory of metaphor; see Ison et al. (2015).

3. The Greek verb *κυβερνάω* (*kubernáo*) means "to steer," but in Wiener's "reinvention" of the term and in post-Wiener discourse, the focus was not on the verb form, but the noun *kybernetes,* meaning "helmswoman or steersman." In *Wikipedia*, the Englishman Tyndale is attributed with using "governance" in 1831, so it may be that the term came into common usage in the 1830s in both France and England (Governance, n.d.).

4. As we have done earlier, many scholars refer to these lineages as first- and second-order cybernetics; but since these are descriptions, or classifications, of "fields," we try to avoid their use in favour of a language that privileges embodied praxis, although this is not always easy to do.

5. In the language of the academic field these situations are often called "multi-stakeholder situations," in which it is expected that the stakes of actors will be variously built, but unless actors with multiple partial perspectives are acknowledged and engaged, little progress in improvement can be made; these situations are much the same as those framed by Rittel and Webber (1973) as "wicked problems," or by Ackoff (1974) as messes, or by Schön (1995) as the swamp of real life issues.

6. Within the domains named, we would lay claim to being "intellectual adventurers" (Breton & Proulx, 2006) because our work has attempted to enact and institutionalize (rather than appropriate) cybernetic concepts and theories in innovative ways.

7. We use R&D, normally understood as an abbreviation for research and development, as a noun to break away from the linearity implied by thinking R then D.

8. In some ways our praxis commitments have moved to different levels in a systemic hierarchy—DBL to the therapeutic relationship, primarily a duo, and RLI to the level of governance of human-biosphere relations.

9. MOOCs are massive open online courses—for which no obvious business model has emerged, despite their recent popularity. For a critique see San José Philosophy Department (2017).

10. Throughout the text the term "emotion" is used to refer to a motivational driver or source of activation, whereas the term "feeling" is used to refer to a reflective evaluation.

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Appendix: A heuristic used for reflection on the authors' professional praxis

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
Stage 1: Bringing the system into existence (i.e., naming the system) with first-order processes	Agree on the essential participants (key stakeholders); provide potential participants with the experience of being listened to; facilitate the generation of stories/narrative (to trigger enthusiasm)	Invite relevant parties to state their interest in a particular event/experience	Ability to identify parties with a particular stake in an outcome (e.g., resource providers; users of outcome; producers of outcome); capacity to actively listen and foster narrative accounts	To not equally involve stakeholder groups that historically have exercised little influence on how particular decisions are made	Identifying who has agency, and to what end, in the therapeutic relationship	In various research projects we have explored and devised ways to pursue a "politics of invitation"— an invitation is different in its emotional dynamic to a demand, a request, or coercion disguised as an invitation (High, 2002)	There are structural/institutional constraints to receiving and accepting invitations, particularly in the public sector; our praxis approaches for "triggering" enthusiasm have withstood the test of time.
	A "system" is generated that has been determined by the main issues of concern to the key stakeholders.	The system is determined by the "problem," not the problem being determined by the system.	Group process skills coupled with outcome-oriented skills	That preconceived ideas of what constitutes the "problem" will hinder a reframing of what constitutes an actionable problem	Both parties are required to work to co-create a third domain of action, one biased by neither of the two initial positions.	We have designed and conducted many successful processes, but all too often key personnel depart (i.e., staff turnover in the public sector) or we rarely secure active engagement or even helpful benign neglect from high-level managers in agencies, ministries and the like.	System-determined problems dominate in almost all contexts; difficult to create spaces for the emergence of problem-determined systems; John Seddon (see 2008) of Vanguard Consulting says he will not accept a job unless all key senior-level staff commit to the process (pers. comm. to RLI, 2014).

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
	Collection of sufficient empirical data so as to establish the existence of specified events/experiences	Generation of patterns of data over time	Ability to recognize the key categories of data required and requisite skills to collect and quantify data	That easily quantifiable data will be judged as being superior to less easily quantifiable data (e.g., value statements; emotional responses)	A case history to be shaped by data drawn from emotional, physical, and aspirational experiences (past, present, anticipated future)	This is relatively easy methodologically but demanding in terms of time and funding. On reflection we have a tendency to neglect this step in our praxis in favour of enhancing the quality of the experience for those participating—perhaps a trap given the mainstream preoccupation with first-order data and systematic causality.	The setting of therapeutic practice (e.g. institutions and financing) may create a dynamic that is not, or is rarely, possible in public-sector, multi-stakeholder processes.
	Determining the boundaries of the system (conceptual, geographical, etc.)	To incorporate data from the biophysical domain and the psychosocial domain in determining system boundaries	Ability to successfully invite participants to offer narrative data via social technologies (e.g., semi-structured interviews, focus groups)	To favour the generation of a dominant biophysical system over a "human activity system"	The human spirit has the ability to imagine and to desire so much yet is capable of achieving so little. The tension between these two capacities constitutes the core focus for ongoing therapeutic interaction.	In some groups it is difficult to have the biophysical domain admitted to the conversation in any meaningful way, but with others the reverse is true (two cultures), e.g., experience of asking groups to create a conceptual model of a social-ecological system and generating many different models from the same concept.	The concept "system" has gone feral (Ison, 2016), which has significant, often negative consequences. All uses of the concept "system" bring with its use an implicit or explicit boundary judgment— too infrequently appreciated; there is too little appreciation of the implications of living in a language that privileges nouns.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
Stage 2: Evaluating the effectiveness of the system as a vehicle to elicit useful understanding (and acceptance) of the social and cultural context	Judgments on adequacy of data to contextual demands	Awareness of how data were generated and psychological and sociological driving forces at work (e.g., operation of dominant mythologies; historical underpinnings)	Ability to see different worldviews as expressions of prior and differing life experience	"Experts" and others with social status tending to impose their conceptual models and boundaries on other parties	Client expects therapist to be an expert. Expectation has to be explored and demythologized.	Creating the space for reflexivity is difficult—too seduced by business as usual.	We have made a lot of progress in designing, or co-designing, systemic inquiry processes that cut through positional and gendered power differentials. We have processes that, given sufficient time, can generate substantial relational capital from which trust, concerted action, changes in understandings, and changes in practice emerge … but this process rarely becomes institutionalized.
	Seek additional contextual data if necessary	Articulate the meaning-making linkage between first-order and second-order data, the latter giving meaning to the former	Ability to elicit contextual information and to appreciate the shaping function of dominant mythologies: how meaning is made by reference, often outside of awareness, to organizing constructs such as institutional or cultural "stories"	Desire to establish a hierarchy of knowledge "types": one kind of knowledge being judged as superior (more useful) than any other type	Use of metaphor/myth to facilitate a non-literal attitude to events: each event having a sociological and a mythic character	In Open University (OU) pedagogy this has been achieved by creating the invitation for learners, as insipient systems practitioners, to take "a design turn"— see Ison and Blackmore (2014).	There is a need to better appreciate what affordances governance settings and institutional designs offer for the enactment of a Batesonian epistemology.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
	Seek legitimation of match between an existing worldview and the history of how such a view was formed	Each individual is responsible for the world they "construct," and each set of knowledge is valid for that person precisely because they have constructed it.	Ability to work with a multiverse of worldviews rather than aspiring for a common or universal view	That the researcher(s) will subtly try to influence the proceedings by asserting a dominant position representing their own point of view	The culturally dominant praxis of pathologizing disturbing psychological experiences is expressed as only a partial viewpoint.	We have had more success in our pedagogical design than in our research praxis—mature-age learners at the OU are in the program because they choose to be—hence have a different underlying emotion to that of many research engagements.	The challenge is to create the circumstances where participants stay in the conversation.
	Achieve "two-way" conversation, or "dialogue" in which individuals speak from their respective positions	Each expression to be accepted as a contribution of value to the eventual outcome (an outcome that is yet to be named)	To actively listen and respect (but not necessarily agree) with others. Confidence in presenting one's position	Some people are unable to accept that there may be different "truths" representing different worldviews.	Divergent worldviews can be held within an overarching attitude/emotion of deep respect (love).	In process designs we engage in "contracting" at the start and revisit throughout—we attempt to frame the contract in terms of relational phenomena.	Governance failure is pervasive in relation to the social-biophysical realm; there may be opportunities to invent institutions that enable a therapeutic dynamic to become the focus of praxis in this domain.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
Stage 3: Generation of a joint decision-making process (a problem-determined system) involving all key stakeholders	All participants (stakeholders) are encouraged to fully address their concerns and aspirations	Ambiguity and uncertainty reflect the non-absolutist understandings associated with every position	To reflect back to the participants how each position has an "appropriateness" for a specified intellectual domain; outside of that domain appropriateness diminishes rapidly.	Matters which can be held as "certain" in one domain can be generalized across other domains.	In therapy, decision-making is the ongoing dynamic of every session. Each "movement" is a consequent of difference being expressed verbally and non-verbally.	We live in a culture where time devoted to process and the co-construction of meaning are undervalued.	The emergence of discourses around co-management, co-design, co-research, co-inquiry may open spaces for praxis innovation.
	Respective concerns and aspirations are mirrored back to participants, showing understanding of respective position	A publicly sanctioned reflexive process allows for both confirmation and public acknowledgement.	Facilitation skills sufficient to reflect what has been contributed, and how it has been said, without introducing any new material or altering the emotional milieu	People not recognizing and/or accepting their own blind spots	The difference between talk and reflective language, especially as regards attitudes just outside of awareness, is emphasized.	The skills to do this in our praxis field are not well developed; listening is undervalued and underappreciated.	Carefully designed processes may affect outcomes that are desired, but participants may still remain unable to respond (i.e., have no response-ability) because of extant institutional arrangements.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
	The "problem," and thus a desirable outcome, is named.	The problem is within the action domain of this group. This group has "ownership" of the problem and of the eventual outcome.	Skills of analysis and synthesis such that the nominated problem expresses some of the key needs of the stakeholders	That the responsibility for acting on the problem will be projected to parties outside of the task group	The presenting problem is only occasionally the sole focus of therapeutic attention.	Creating the circumstances for reflexivity is not easy; our attempts at having metaphor research funded have largely been unsuccessful.	There are limitations to the "problem metaphor" that we now largely avoid in favour of, e.g., constructing "the issue," or engaging with "a situation."
	The decision (not necessarily agreed with by all) is made.	The agreement is that all parties have been able to present their positions in a fair and full manner. Acceptance to proceed is not contingent on full agreement on the final position.	That an intellectual and emotional climate is achieved in which all participants can see the merits of differing points of view and are able to "let go" of preferred positions	That a stakeholder abandons the decision-making process rather than be seen to be compromising	The decision to continue therapy is made on a sessional basis, as is the decision to focus on which one or other of the primary domains (emotional, feeling based, behavioural, spiritual).	Research from which this framework was generated elucidated how consensus was a lowest common denominator position that undermined the emotional commitment to follow-up action except by those who started with the consensus position.	In multi-stakeholder situations, staff turnover and thus the progress of a group is often fraught. Seeking accommodation of difference is more useful than consensus.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
Stage 4: Evaluating the effectiveness of the decisions made (i.e., how has the action taken been judged by stakeholders?)	Collective judgments of how well the generated problem represented key needs of all stakeholders	This is a measure of internal effectiveness of the process and of subsequent commitment to the implementation of the decision.	Ability to openly listen to participants' "second thoughts" without showing excessive defensiveness	Risk of jeopardizing the whole process because the outcomes were judged as being less than perfect	Not achieving the co-developed and shared goals (outcomes of decisions made) is characteristic of psychotherapy. Evaluation needs to be both subtle and overt and made by both parties.	Action is not causal in a linear way and claims about cause and effect, and thus impact or effectiveness, become politically and methodologically fraught.	Enacting a Batesonian epistemology requires more attention to discourse development in what is now understood as efficacy and effectiveness in a given situation.
	Assessment of increased readiness to address, in a similar manner, other needs and concerns	A second-order system coupled with a first-order system facilitates learning-to-learn by the participants and, increasingly, is embedded in the culture of the organizations.	Ability to demonstrate the second-order outcomes and to present them as reusable building blocks	A tendency to disparage second-order outcomes vis-à-vis first-order ones	Moving from a presenting problem focus to a more dispositional one (How might I position myself in the flow of daily living?).	Our innovations around "systemic inquiry" as an alternative process and institution to that of the project shows considerable promise (see Ison, Carberry, Davies, Hall, McMillan, Maru, et al., 2014).	How to institutionalize new institutions and "dispose" of ones not fit for purpose is a new challenge.

Process stage	Tasks	First / Second-order processes	Skills	Potential pitfalls	Critical reflection / incidents DBR	Critical reflection / incidents RLI	Contemporary implications
	Estimate how transparent (open to public scrutiny) the decision-making process has been	A transparent process allows participants to accept a decision (because the process has been experienced as being fair and equitable) even when they do not fully agree with it.	Ability to balance those who bring with them institutional and/or social "power" with those traditionally less endowed	That a climate of mutual acceptance cannot be achieved: where differential "power" has not been accepted	"Power" is understood as a whole system of ideas that works to maintain our current society. It is a belief system that is closely aligned with religion and ideas of progress.	The challenge is to find, and enact, leverage points against a field of power, e.g., systemic inquiry; agency to frame and re-frame situations; exploring institutional affordances; engaging in systemic design and/or evaluation.	Co-production of an evaluative narrative is not resourced and valued.
	Evaluate the ease of implementation of the decisions made	Organizations tend to conserve their status quo, especially the desire to maintain the patterning of key relationships.	Skills to articulate the structural variables, both constraints and enabling factors, that influence implementation	An organization might find it preferable to shift the entire debate to a totally different arena rather than implement an "upsetting" decision.	Converting a desire to change (attitude, behaviour) into part of daily praxis only happens slowly and with practice.	This requires continuity—a rare thing in multi-stakeholder situations.	Reframe governance as the choreography of effective "problem-determined system" performances?

Note: This heuristic was developed over a 25-year period. It is based on an adaptation of a design for enacting an R&D system comprising first- and second-order processes (understood as a totality or duality, not a dualism); DBR: David Russell; RLI: Ray Ison. Source: Adapted from Russell & Ison, 2000b.